GENERAL CHEMISTRY 111

Fall 2009

Course Description: Students are introduced into properties of matter, chemical reactions and stoichiometry, thermochemistry, atomic structure as well as, chemical bonding.

Rationale: Chem 111 is a semester course which introduces the student to an in depth discussion of chemical principles and reaction stoichiometry. The Prerequisite for this course is College Algebra.

Competencies: Students who complete this course will develop related reasoning and problem solving skills.

Behavioral Objectives Students who complete this course will be able to identify pertinent variables, recognize both quantitative and qualitative trends in data and the critical thinking skills needed to apply this information to a variety of problems

Assessment Procedure: There will be four examinations, a number of homework assignments and a Final Examination.
The dates for each of the four exams will be annouced in class or posted on the blackboard a week before the exam.
The final grade will be made up of the three best scores out of the four exams and the final examination.
The Final Examination cannot be dropped. ***If you miss an exam that will be the score you get to drop***. (i.e. **There will be NO make-up exam**.) If you miss a second exam, you will receive a grade of "0" and this score will be included in the final assessment of your grade for the class.

- Grading Scale:
- Three best of four exams 300 pts or 60%
- Final Exam 100 pts or 20%
- Homework + Quizzes 100 pts or 20%
- Total possible points 500 pts 100%
- Grade Assignments:
- A 425-500 or 85%+
- B 375-424.999 or 75%-84.99%
- C 325-374.99 or 65%-74.99%
- D 275-324.99 or 55%-64.99%
- F <2750 or <55%

There will be no deviation from this grading scale: the scores will not be curved. The

scores will be based on the maximum possible points.
Homework assignments may be given. In such situations, the total points of the homework assignments will be worth 5%.

Tentative Exam Schedule: September 14*, October 12, October 29, November 19.*

The exam you miss is the one you get to drop.

For students who have to attend a school function and therefore have to miss a second exam, they will have to present a letter from a school official showing there involvement in the said function prior to the exam date. An excused absence from the attendance office alone, will not be accepted. For such students, a make-up examination will be given.

Attendance at Lectures:

- I will take attendance but it will not count toward your grade. *Attendance record will be maintained on the banner for the administrative staff to access*.
- You are responsible for everything covered in lecture, even if it isn't in the book. If you miss a lecture, you should obtain notes from another student. Note-taking styles vary widely, however, and I encourage you not to routinely rely on the notes of others. You are also responsible for announcements made during lecture concerning the content and types of problems to be expected on exams. **Check the blackboard often for posted class announcements.**

- If you miss an exam, that will be the exam you get to drop. If you miss a quiz, however, you must have a legitimate, university approved excuse. ***are returned. You loose any opportunity to gain any extra credit if you are not present when the papers are returned.***
- ***THE GRADED PAPERS MUST BE RETURNED TO THE INSTRUCTOR. STUDENTS MAY REQUEST A COPY OF THEIR GRADED PAPERS.***
- ***ALL HOMEWORK ASSIGNMENTS MUST BE TURNED IN AT THE BEGINNING OF THE CLASS LESSON ON THE DUE DATE. THERE WILL BE A PENALTY FOR LATE ASSIGNMENTS. IF YOU ARE GOING TO BE AWAY, PLAN TO HAVE IT TURNED IN ON THE DUE DATE AND TIME. NO ASSIGNMENTS WILL BE ACCEPTED AFTER THE CLASS PERIOD***.
- ***Do not come to me towards the end of the semester desiring extra work to boost your grade because you want to maintain your scholarship or graduate***.

Suggestions for studying chemistry

Make sure you are not overcommitted. Study (nearly!) every day. Read the chapter several times. Work examples in the text, in-class problems, and recommended problems as well as the homework problems. **Discuss material with classmates or study partners but don't rely too much on this help for homework.** Do whatever you have to (within reason!) to stay awake in class. Start the homework early and don't **rely too much on copying other students work.**

An approach to problem solving

Translate everything in the problem out of words and into mathematical statements

and/or pictures complete with units. Express the unknown quantity in symbols or pictures complete with units. Determine the relationship between the given quantities and the unknown. Perform the calculation. Check units, significant figures, and the reasonableness of the answer.

ADA Requirements

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Grambling State University aheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. Students with disabilities should register with the ADA Student Services Coordinator , Ms. Ruth Osborne, Director of the Counseling Center, 274-3338 a timely manner to arrange for appropriate accommodations, and contact their instructor . If you need accommodation in this class related to disability, please make an appointment as soon as possible to see me.

Course Content (Lecture Notes)

Chapter 1 Matter and Energy 1
Hypothesis, Theory and Law,
Introduction to Matter, Properties of Matter,
Measurements in Chemistry, Scientific Notation, Scientific Figures,
Dimensional Analysis, Heat and Temperature.
Linear Regression Analysis using Excel Spreadsheet.

Chapter 2 The Components of Matter, Atoms, Molecules and Ions. 11
The Discovery of Atomic Structure and Periodic Table ,
Nomenclature of Inorganic Compounds, Formulas of Ionic Compounds,
Nomenclature of Organic Compounds.

Chapter 3 Reaction Stoichiometry and Chemical calculations. 26
The Avogadro's Number and the Mole Concept,
Formula Weights and Moles,
Percent Composition, Empirical or Simplest Formulas,
Balancing of Chemical Equations,
Quantitative Information From Chemical Equations,
Limiting Reactant, Percentage Yield and Concentration of Solutions.

Chapter 4 Chemical Reactions in Aqueous Solution. 39
Classification of Chemical Reactions, Solubility Rule,
Reactions of Acids and Bases
Oxidation Numbers, Balancing REDOX reactions,
Acid-Base Titrations, Solution Stoichiometry, REDOX Titrations.

Chapter 5 Gases and Kinetic Molecular Theory. 53
The Gas Laws, Gas Mixtures and Partial Pressures,
Ideal gas Equation, Volumes of Gases in Chemical Reactions,
Molar Mass and Gas Densities, Kinetic Theory of Gases,
Diffusion of Gases, Real gases. Real Gases.

Chapter 6 Thermochemistry. 65
Calorimetry, Heat and Energy Changes,
First law of Thermodynamics,

Enthalpy, Hess Law and Enthalpy of Formation.

Chapter 7 Atomic Structure. 74
Wave Nature of Light and Quantum Effects and Photons,
The Dual Nature of the Electron and Bohr's Model of the Hydrogen Atom.
Quantum Mechanics, Atomic Orbitals,
Representation of Atomic Orbitals, Orbitals in Many- Electron Atoms.

Chapter 8 Electron Configuration and the Periodic Table. 82
Periodic Properties of the Atoms,
Sizes of Atoms, Ionization Energy, Electron Affinity and Electronegativity,
Metals, Nonmetals and Metalloids, Group trends, Selected Nonmetals

Chapters 9, 10, 11. Models of Chemical Bonding. Ionic Bonding, Covalent Bonding, Bond Polarity and Lewis Structures, Resonance Structures, Oxidation Numbers, Bonding Theories, The VSPER Theory and Hybridization, Molecular Geometry, Multiple Bonds and Polarity of Molecules. Molecular Orbital Theory and Liquid State.

HOMEWORK ASSIGNMENTS Will be assigned from this set.

Chapter 1 (pg. 35)	1.1 - 1.9; 1.19-1.25; 1.26 - 1.43; 1.52 - 1.69
Chapter 2 (pg. 81)	2.2 - 2.17; 2.22 - 2.27; 2.39 - 2.69; 2.54 - 2.78; 2.84 - 2.109; 2.129 - 2.140
Chapter 3 (pg. 131)	3.1 - 3.21; 3.33-3.42; 3.49 - 3.86; 3.96-3.110
Chapter 4 (pg. 178)	4.10 - 4.21; 4.26 - 4.38; 4.41 - 4.79; 4.87-4.96; 4.113-4.122.
Chapter 5, (pg 227)	5.2-5.13; 5.16-5.31, 5.39-5.51; 5.52-5.57; 5.70-5.74
Chapter 6, (pg 261)	6.8-6.13, 6.16-6.29, 6.30-6.44, 6.37-6.44, 6.52-6.55, 6.65-6.81
Chapter 7 (pg. 297)	7.1-7.22, 7.27-7.34; 7.39-7.44; 7.49-7.60; 7.84
Chapter 8 (pg. 336)	8.3-8.44; 8.53-8.87
Chapter 9 (pg 373)	9.4-9.31; 9.57-9.68.
Chapter 10 (pg 405)	10.5-10.62
Chapter 11 (pg 421)	11,5-11.12, 11.20-11.24

The class exams will be a subset of the homework assignments.

The text for the course is

- "Chemistry" , The Molecular nature of Matter and Change, Fifth Edition, by Silberberg..
- **Fundamentals of Chemistry. A concise Approach by Frank Ohene. This is simplified lecture notes for the course with detailed work examples..**